Time Scale Annual Input-National Zone Agent Simulation System **Output Tables** FIRMS ANNUAL Establishments Establishment by Zone with Synthesis Characteristics Input Data Output Data Establishments by Zone with Interim Output Suppliers Model Component Identified Productivity Factors SHIPMENTS Procurement Market Model Imports and **Exports** Final trades for **Logistics Costs** Shipment Size and Shipping Rail, Air, Water producers and groups and Pipeline consumers Times Networks Mode and Shipment Size Model Commodity Commodity Flows and Flows and Flows and Flows and Flows and by Truck by Rail by Air by Water by Pipeline Weekly/Daily Weekly/ Number and Carrier Choice Transport Chain Truck Locations of Daily Model Commodity Model Transfers Flows by Carrie TRIPS Road Networks with Observed Backhauling & Weekly/Daily Long Distance Truck Weekly/Daily Attributes for Consolidation Truck Trips Assignments Truck Volumes Background VEHICLES

Figure 1. National Freight Model Detailed Flowchart